

Patent claims

1. Adsorbing agent for dust-collecting filters, especially for adsorbing odours, **characterised in that** the adsorbing agent comprises fibres, flakes and/or granulate as a supporting material onto which a powdery adsorption material is applied superficially.
2. Adsorbing agent according to claim 1, **characterised in that** the adsorption material is applied in an amount of 1 to 50 wt-% of the supporting material.
3. Adsorbing agent according to claim 2, **characterised in that** 7 to 25 wt-% are applied.
4. Adsorbing agent according to at least one of claims 1 to 3, **characterised in that** the adsorption material is selected from active charcoal, impregnated active charcoal, functionalised carbon, hydrophobic zeolites, hydrophobic, porous polymers, bentonites and/or crystalline organometallic complexes.
5. Adsorbing agent according to claim 4, **characterised in that** the functionalised carbon is an aromatic carbon skeleton with functional groups.
6. Adsorbing agent according to claim 4, **characterised in that** the active charcoal is coconut shell, wood, rock or bamboo charcoal.

7. Adsorbing agent according to claim 4 or 5, **characterised in that** the active charcoal is impregnated with acid or basic chemicals and/or with silver salts.
8. Adsorbing agent according to claim 4, **characterised in that** the zeolites have micropores of a pore size $> 5 \text{ \AA}$.
9. Adsorbing agent according to claim 8, **characterised in that** the pore size of the micropores is $> 6.5 \text{ \AA}$.
10. Adsorbing agent according to claim 8 or 9, **characterised in that** the specific surface of the zeolite is $> 400 \text{ m}^2/\text{g}$.
11. Adsorbing agent according to at least one of claims 8 to 10, **characterised in that** the zeolites have a modulus > 200 , preferably > 300 .
12. Adsorbing agent according to at least one of claims 8 to 11, **characterised in that** the particle size of the zeolites is in the range between 2 and 30 μm .
13. Adsorbing agent according to claim 4, **characterised in that** the porous polymers have micropores of 6 to 20 \AA , mesopores of 20 to 500 \AA and macropores $> 500 \text{ \AA}$.
14. Adsorbing agent according to claim 4 or 13, **characterised in that** the average pore diameter is between 3 and 300 \AA .
15. Adsorbing agent according to claim 4, 13 or 14, **characterised in that** the particle size of the porous polymers is in the range between 1 and 500 μm , preferably between 1 and 200 μm .

16. Adsorbing agent according to at least one of claims 4, 13 to 15, **characterised in that** the pore volume is $\geq 0.4 \text{ cm}^3/\text{g}$.
17. Adsorbing agent according to at least one of claims 4, 13 to 15, **characterised in that** the porous polymers are hydrophobic.
18. Adsorbing agent according to at least one of claims 4, 13 to 17, **characterised in that** the porous polymers are constructed from styrene, acrylic acid and/or their derivatives.
19. Adsorbing agent according to at least one of claims 1 to 18, **characterised in that** the adsorption material is chemically and/or physically bound to the supporting material.
20. Adsorbing agent according to at least one of claims 1 to 19, **characterised in that** the adsorption material is bound to an electrostatically charged supporting material.
21. Adsorbing agent according to at least one of claims 1 to 20, **characterised in that** the adsorption material is powdery and has a mean particle size of 1 to 100 μm .
22. Adsorbing agent according to at least one of claims 1 to 21, **characterised in that** the supporting material comprises fibres which are selected from chemical fibres and/or natural fibres.

23. Adsorbing agent according to claim 22, **characterised in that the fibres are rendered antibacterial.**
24. Adsorbing agent according to claim 22 or 23, **characterised in that the chemical fibres are cellulose fibres such as viscose and/or synthetic fibres.**
25. Adsorbing agent according to claim 24, **characterised in that the synthetic fibres are selected from fibres formed from polyolefins, polyester, polyamides, polyacrylonitrile and/or polyvinyl alcohol.**
26. Adsorbing agent according to claim 22 or 23, **characterised in that the natural fibres are selected from cellulose, wood fibre materials, kapok, flax, jute, Manila hemp, coco, wool, cotton, Kenaf, abaca, mulberry bast and/or fluff pulp.**
27. Adsorbing agent according to at least one of claims 22 to 26, **characterised in that the fibres are smooth, branched, crimped, hollow and/or textured and have a non-circular (e.g. trilobal) cross-section.**
28. Adsorbing agent according to at least one of claims 22 to 27, **characterised in that the fibres have a mean length of between 0.3 mm and 100 mm, preferably between 0.5 and 70 mm.**
29. Adsorbing agent according to claim 28, **characterised in that the fibres have a mean length of 1 to 9.5 mm.**

30. Adsorbing agent according to at least one of claims 1 to 29, **characterised in that** the supporting material comprises flakes which are selected from cellular plastics, non-wovens, textiles, foamed starch, foamed polyolefins, as well as films and recovered fibres.
31. Adsorbing agent according to claim 30, **characterised in that** the flakes have a diameter of 0.3 mm to 30 mm, preferably 0.5 to 20 mm.
32. Adsorbing agent according to claim 31, **characterised in that** the flakes have a diameter of 1 to 9.5 mm.
33. Adsorbing agent according to at least one of claims 1 to 32, **characterised in that** the supporting material comprises granulates which are selected from macroporous polymers.
34. Adsorbing agent according to claim 33, **characterised in that** the particle size of the granulates is in the range between 0.2 and 1.5 mm, preferably between 0.3 and 1.0 mm.
35. Adsorbing agent according to claim 33 or 34, **characterised in that** the macroporous polymers are constructed from polystyrene, acrylic acid and/or their derivatives.
36. Adsorbing agent according to at least one of claims 33 to 36, **characterised in that** the surface of the macroporous polymers is $> 200 \text{ m}^2/\text{g}$, preferably $> 350 \text{ m}^2/\text{g}$.
37. Adsorbing agent according to at least one of claims 33 to 36, **characterised in that** the porosity $\geq 0.4 \text{ ml/ml}$.

38. Adsorbing agent according to at least one of claims 1 to 37, **characterised in that** the adsorbing agent is enclosed in an air-permeable wrapper.
39. Adsorbing agent according to claim 38, **characterised in that** the wrapper is an air-permeable non-woven.
40. Dust collection chamber, especially for a vacuum cleaner, to which air can be applied, **characterised in that** an adsorbing agent according to one of claims 1 to 39 is contained in the dust collection chamber.
41. Dust collection chamber according to claim 40, **characterised in that** 0.03 to 5 g of the adsorbing agent per 1000 cm³ are contained in the dust collection chamber.
42. Dust collection chamber according to claim 41, **characterised in that** 0.3 to 2 g adsorbing agent are contained per 1000 cm³.
43. Dust collection chamber according to at least one of claims 40 to 42, **characterised in that** it is the dust collection chamber of a bagless vacuum cleaner.
44. Dust collection chamber according to at least one of claims 40 to 43, **characterised in that** that it is formed by a refuse collection container.
45. Dust collection chamber according to at least one of claims 40 to 44, **characterised in that** it is formed by a dust-collecting filter made of an air-permeable filter material.

46. Dust collection chamber according to claim 45, characterised in that the adsorbing agent is present in a bag, which has an air-permeable wrapper, in the dust-collecting filter.
47. Dust collection chamber according to claim 45 or 46, characterised in that the adsorbing agent is arranged under a covering in part of the inner surface of the dust-collecting filter.
48. Dust collection chamber according to claim 47, characterised in that the covering is a non-woven layer.
49. Dust collection chamber according to claim 47, characterised in that the adsorbing agent is contained in a pad which is arranged on part of the inner surface of the dust-collecting filter.
50. Dust collection chamber according to claim 49, characterised in that the pad comprises at least one layer of a filter paper or of a special non-woven, the adsorbing agent arranged on the surface of the filter paper being covered by at least one non-woven layer.
51. Dust collection chamber according to at least one of claims 46 to 50, characterised in that the wrapper material of the bag or the covering is formed from a material which can be destroyed under operating conditions.
52. Dust collection chamber according to at least one of claims 45 to 51, characterised in that the dust-collecting filter

is of such dimensions and design that it can be operated with a volume flow rate of 10 cm³/h to 400 m³/h.

53. Dust collection chamber according to at least one of claims 45 or 52, **characterised in that** the filter material of the dust-collecting filter is a single-layer or multilayer paper and/or non-woven material.
54. Dust collection chamber according to at least one of claims 45 to 53, **characterised in that** it is formed by a vacuum-cleaner bag.
55. Dust collection chamber according to at least one of patent claims 45 to 53, **characterised in that** it is formed by a pleated filter or bag filter.
56. Method for adsorbing odours in a dust collection chamber according to at least one of claims 45 to 55, **characterised in that** an adsorbing agent according to one of claims 1 to 39 is used for it.
57. Method according to claim 56, **characterised in that** 0.2 to 5 g adsorbing agent are used per 1000 cm³ dust collection chamber.
58. Method according to claim 56 or 57, **characterised in that** an air-permeable dust-collecting filter is used as the dust collection chamber.
59. Method according to claim 58, **characterised in that** the adsorbing agent is introduced into the dust-collecting

filter before the start of a first suction process or at the start of the suction process.

60. Method according to at least one of claims 58 or 59, **characterised in that** the adsorbing agent is present in a wrapper and is introduced into the dust-collecting filter before the start of a first suction process or at the start of the suction process.
61. Method according to claim 60, **characterised in that** the wrapper is so designed that it is destroyed at the given volume flow rate.
62. Method according to at least one of claims 58 to 61, **characterised in that** this is a method for vacuum-cleaning using a cylinder vacuum-cleaner or an upright vacuum-cleaner.
63. Use of the adsorbing agent according to at least one of claims 1 to 39 for adsorbing odours.